

CLAIMS

What is claimed is:

1. A pharmaceutical composition comprising:
 - a diblock copolymer of poly(ethylene oxide) and poly(butyl (alkyl)acrylate-co-(alkyl)acrylic acid); and at least one biologically active agent.
2. The polymer of claim 1 wherein said poly(ethylene oxide) segment has a molecular weight in the range of about 200-80,000 Da.
3. The polymer of claim 1 wherein said poly(butyl (alkyl)acrylate-co-(alkyl)acrylic acid) segment has a molecular weight in the range of about 200-80,000 Da.
4. The polymer of claim 1 wherein said alkyl is an alkyl chain having from 0 to about 10 carbon atoms.
5. The polymer of claim 1 wherein said butyl portion of the butyl (alkyl)acrylate is a linear or branched chain.
6. The polymer of claim 1 wherein said butyl (alkyl)acrylate : (alkyl)acrylic acid is in a molar ratio in the range of about 5:95 to 95:5.
7. The pharmaceutical composition of claim 1 wherein said diblock polymer is poly(ethylene oxide)-block-poly(n-butyl acrylate-co-methacrylic acid) having an n-butyl acrylate: methacrylic acid molar ratio of about 50:50.
8. The pharmaceutical composition of claim 1 in the form of supramolecular assemblies or micelles.
9. The pharmaceutical composition of claim 8 wherein said supramolecular assemblies or micelles are in a size range of about 5 to 1000 nanometers.
10. The pharmaceutical composition of claim 8 wherein said supramolecular

- 1 assemblies associate or dissociate reversibly in response to environmental pH
2 changes.
- 3 11. The pharmaceutical composition of claim 1 wherein release rate of said
4 biologically active agent increases with increase in pH.
- 5 12. The pharmaceutical composition of claim 8 wherein the biologically active agent is
6 a hydrophobic drug incorporated in said supramolecular assemblies by physical or
7 chemical methods.
- 8 13. The pharmaceutical composition of claim 12 wherein the hydrophobic drug is
9 fenofibrate.
- 10 14. The pharmaceutical composition of claim 8 wherein the biologically active agent is
11 a cation or polycation.
- 12 15. The pharmaceutical composition of claim 14 wherein said polycation is a peptide
13 or protein bearing cationic residues.
- 14 16. The pharmaceutical composition of claim 14 wherein the cation or polycation
15 interacts electrostatically with said (alkyl)acrylic acid units.
- 16 17. The pharmaceutical composition of claim 14 wherein the cation is verapamil
17 hydrochloride.
- 18 18. The pharmaceutical composition of claim 8 wherein the biologically active agent
19 forms metal coordination complexes with said (alkyl)acrylic acid units.
- 20 19. The pharmaceutical composition of claim 18 wherein the biologically active agent
21 is cisplatin.
- 22 20. The pharmaceutical composition of claim 18 wherein the biologically active agent
23 is carboplatin.

1 21. The pharmaceutical composition of claim 12 wherein incorporation of a
2 hydrophobic drug in the supramolecular assemblies enhances the bioavailability of
3 the hydrophobic drug upon oral administration.

4 22. The pharmaceutical composition of claim 8 which is administered by oral,
5 intravenous, intra-arterial, subcutaneous, intramuscular, intraperitoneal, rectal,
6 vaginal or topical route.

7 23. The pharmaceutical composition of claim 8 having a targeting ligand on a surface
8 thereof.